1. A method comprising:

transmitting a sound wave comprised of a first portion and a second portion;

obtaining a characteristic of the second portion;

storing the characteristic; and

using the characteristic to detect an echo of another sound wave.

2. The method of claim 1, wherein the first portion comprises a pulse signal and the second portion comprises a ring-down signal, the ring-down signal comprising a signal that decays in amplitude over time.

3. The method of claim 2, wherein the ring-down signal is a function of a transducer used to transmit the pulse signal.

4. The method of claim 2, wherein the characteristic comprises an amplitude in the ring-down signal.

5. The method of claim 1, further comprising:

transmitting the other sound wave comprised of a first

portion and a second portion;

receiving an echo of the other sound wave; and

analyzing the echo of the other sound wave based on the characteristic.

6. The method of claim 5, wherein analyzing comprises distinguishing the second portion of the other sound wave from the echo of the other sound wave.

7. The method of claim 6, wherein distinguishing comprises detecting an amplitude in the echo based on the characteristic.

8. The method of claim 7, wherein detecting the amplitude in the echo comprises:

assigning a threshold based on the characteristic; and

comparing the amplitude in the echo to the threshold.

9. The method of claim 8, wherein the amplitude in the echo is detected if the amplitude in the echo exceeds the threshold.

10. A method comprising:

measuring ambient noise at transmission of a first signal comprised of a pulse and a decaying portion;

obtaining an amplitude in the decaying portion;

removing the ambient noise from the amplitude; and

using the amplitude with removed ambient noise to distinguish a decaying portion of a second signal from an echo of the second signal.

11. The method of claim 10, wherein using the amplitude to distinguish comprises:

measuring ambient noise at transmission of the second signal;

combining the ambient noise and the amplitude; and

comparing the decaying portion of the second signal with the combined ambient noise and the amplitude.

12. The method of claim 10, wherein the decaying portion comprises a ring-down signal that results from a transducer transmitting the pulse.

13. The method of claim 10, wherein the ambient noise comprises electrical and/or acoustic noise.

14. The method of claim 10, further comprising:

transmitting the second signal; and

receiving the echo of the second signal.

15. A method of distinguishing an echo of a transmitted signal from impulse noise, comprising:

receiving a signal having an amplitude;

measuring a duration of the amplitude; and

determining if the duration exceeds a period;

wherein, if the duration exceeds the period, the signal comprises the echo of the transmitted signal and, if the duration does not exceed the period, the signal comprises the impulse noise.

16. The method of claim 15, wherein the period comprises a fraction of a period of the transmitted signal.

17. The method of claim 16, wherein the period comprises 1/10 of the period of the transmitted signal.

18. The method of claim 15, wherein the impulse noise comprises electrical noise and/or acoustic noise.

19. The method of claim 15, further comprising ignoring the impulse noise.

20. A method comprising:

transmitting a signal towards two objects, a first of the objects being in front of a second of the objects;

receiving a first echo from the two objects; and

receiving a second echo from the two objects;

wherein, if the second echo is comprised of an amplitude having a greater amplitude than the first echo, the method further comprises:

using the first echo to determine information relating to the first object; and

using the second echo to determine information relating to the second object.

21. The method of claim 20, wherein the information relating to the first object comprises a distance to the

first object.

22. The method of claim 20, wherein the information relating to the second object comprises a distance to the second object.

23. The method of claim 20, further comprising storing data that corresponds to the first echo and/or the second echo.

24. The method of claim 20, wherein the first object is acoustically-weaker than the second object.

25. A method comprising:

transmitting a waveform having a predetermined shape;

receiving a signal;

analyzing a shape of the signal; and

determining if the signal comprises an echo of the waveform based on the analysis of the shape of the signal.

26. The method of claim 25, wherein, if the signal has substantially the predetermined shape, the signal is

determined to be an echo of the waveform.

27. The method of claim 25, wherein, if the signal deviates beyond a certain tolerance from the predetermined shape, the signal is determined not to be an echo of the waveform.

28. A pulse-echo sonar scanner for a mobile robot, comprising:

a transmitter which generates a pulse signal;

an acoustic transducer which transmits and receives acoustic signals;

a receiver;

means for determining performance characteristics of the transducer for a given pulse;

means for storing the performance characteristics; and

means for determining threshold levels for an echo signal based on the stored performance characteristics.

29. The pulse-echo sonar scanner of claim 28, wherein the acoustic transducer is capable of rotation through 360°.

30. The pulse-echo sonar scanner of claim 28, further comprising a controller for controlling an angular position of the acoustic transducer.

31. The pulse-echo sonar scanner of claim 28, further comprising a reflective surface on the acoustic transducer that is controlled by the controller.

32. A pulse-echo sonar scanner for a mobile robot, comprising:

a transmitter which generates a pulse signal;

a single acoustic transducer which transmits and receives acoustic signals;

a receiver;

means for determining a level of ambient noise in an environment; and

means for adjusting a threshold level of the receiver such that the threshold level is at least as high as the level of ambient noise.

33. A method of adjusting threshold levels on a mobile robot scanner, comprising:

measuring ring-down characteristics of the mobile robot scanner;

creating a dynamic threshold level based on the ring-down characteristics; and

applying the dynamic threshold levels to received signals.

34. A method of adjusting threshold levels on a mobile robot scanner to compensate for effects of ambient noise, comprising:

measuring the ambient noise; and

adjusting the threshold levels such that the threshold levels are at least as high as a level of the ambient noise.

35. An apparatus comprising:

a transducer which transmits a sound wave comprised of a first portion and a second portion; and

a processor which obtains a characteristic of the second portion, stores the characteristic, and uses the

characteristic to detect an echo of another sound wave.

36. The apparatus of claim 35, wherein the first portion comprises a pulse signal and the second portion comprises a ring-down signal, the ring-down signal comprising a signal that decays in amplitude over time.

37. The apparatus of claim 36, wherein the ring-down signal is a function of a transducer used to transmit the pulse signal.

38. The apparatus of claim 36, wherein the characteristic comprises an amplitude in the ring-down signal.

39. The apparatus of claim 35, wherein:

the transducer transmits the other sound wave comprised of a first portion and a second portion;

a receiver receives an echo of the other sound wave; and

the processor analyzes the echo of the other sound wave based on the characteristic.

40. The apparatus of claim 39, wherein analyzing comprises distinguishing the second portion of the other sound wave from the echo of the other sound wave.

41. The apparatus of claim 40, wherein distinguishing comprises detecting an amplitude in the echo based on the characteristic.

42. The apparatus of claim 41, wherein detecting the amplitude in the echo comprises:

assigning a threshold based on the characteristic; and

comparing the amplitude in the echo to the threshold.

43. The apparatus of claim 42, wherein the amplitude in the echo is detected if the amplitude in the echo exceeds the threshold.

44. An apparatus comprising:

a transducer which transmits a first signal comprised of a pulse and a decaying portion; and

a processor which:

measures ambient noise at transmission of the first signal;

obtains an amplitude in the decaying portion;

removes the ambient noise from the amplitude; and

uses the amplitude with removed ambient noise to distinguish a decaying portion of a second signal from an echo of the second signal.

45. The apparatus of claim 44, wherein using the amplitude to distinguish comprises:

measuring ambient noise at transmission of the second signal;

combining the ambient noise and the amplitude; and

comparing the decaying portion of the second signal with the combined ambient noise and the amplitude.

46. The apparatus of claim 44, wherein the decaying portion comprises a ring-down signal that results from a transducer transmitting the pulse.

47. The apparatus of claim 44, wherein the ambient noise comprises electrical and/or acoustic noise.

48. The apparatus of claim 44, wherein:

the transducer transmits the second signal; and

a receiver receives the echo of the second signal and provides data for the echo to the processor.

49. An apparatus for distinguishing an echo of a transmitted signal from impulse noise, comprising:

a receiver which receives a signal having an amplitude; and

a processor which measures a duration of the amplitude and determines if the duration exceeds a period;

wherein, if the duration exceeds the period, the signal comprises the echo of the transmitted signal and, if the duration does not exceed the period, the signal comprises the impulse noise.

50. The apparatus of claim 49, wherein the period comprises a fraction of a period of the transmitted signal.

51. The apparatus of claim 50, wherein the period comprises 1/10 of the period of the transmitted signal.

52. The apparatus of claim 49, wherein the impulse noise comprises electrical noise and/or acoustic noise.

53. The apparatus of claim 49, wherein the processor ignores the impulse noise.

54. An apparatus comprising:

a transducer which transmits a signal towards two objects, a first of the objects being in front of a second of the objects;

a receiver which receives a first echo from the two objects and a second echo from the two objects; and

a processor which determines if the second echo is comprised of an amplitude having a greater amplitude than the first echo;

wherein, if the second echo is comprised of an amplitude having a greater amplitude than the first echo, the processor:

uses the first echo to determine information relating to the first object; and

uses the second echo to determine information

relating to the second object.

55. The apparatus of claim 54, wherein the information relating to the first object comprises a distance to the first object.

56. The apparatus of claim 54, wherein the information relating to the second object comprises a distance to the second object.

57. The apparatus of claim 54, further comprising a memory which stores data that corresponds to the first echo and/or the second echo.

58. The apparatus of claim 54, wherein the first object is acoustically-weaker than the second object.

59. An apparatus comprising:

a transducer which transmits a waveform having a predetermined shape;

a receiver which receives a signal; and

a processor which analyzes a shape of the signal, and

determines if the signal comprises an echo of the waveform based on the analysis of the shape of the signal.

60. The apparatus of claim 59, wherein, if the signal has substantially the predetermined shape, the signal is determined to be an echo of the waveform.

61. The apparatus of claim 59, wherein, if the signal deviates beyond a certain tolerance from the predetermined shape, the signal is determined not to be an echo of the waveform.

62. A computer program stored on a computer-readable medium, the computer program comprising instructions that cause a processor to:

obtaining a characteristic of a second portion of a sound wave comprised of a first portion and a second portion;

store the characteristic; and

use the characteristic to detect an echo of another sound wave.

63. The computer program of claim 62, wherein the first portion comprises a pulse signal and the second portion comprises a ring-down signal, the ring-down signal comprising a signal that decays in amplitude over time.

64. The computer program of claim 63, wherein the ring-down signal is a function of a transducer used to transmit the pulse signal.

65. The computer program of claim 63, wherein the characteristic comprises an amplitude in the ring-down signal.

66. The computer program of claim 62, further comprising instructions that cause the processor to:

receive an echo of the other sound wave; and

analyze the echo of the other sound wave based on the characteristic.

67. The computer program of claim 66, wherein analyzing comprises distinguishing the second portion of the other sound wave from the echo of the other sound wave.

68. The computer program of claim 67, wherein distinguishing comprises detecting an amplitude in the echo based on the characteristic.

69. The computer program of claim 68, wherein detecting the amplitude in the echo comprises:

assigning a threshold based on the characteristic; and

comparing the amplitude in the echo to the threshold.

70. The computer program of claim 69, wherein the amplitude in the echo is detected if the amplitude in the echo exceeds the threshold.

71. A computer program stored on a computer-readable medium, the computer program comprising instructions that cause a processor to:

measure ambient noise at transmission of a first signal comprised of a pulse and a decaying portion;

obtain an amplitude in the decaying portion;

remove the ambient noise from the amplitude; and

use the amplitude with removed ambient noise to

distinguish a decaying portion of a second signal from an echo of the second signal.

72. The computer program of claim 71, wherein using the amplitude to distinguish comprises:

measuring ambient noise at transmission of the second signal;

combining the ambient noise and the amplitude; and

comparing the decaying portion of the second signal with the combined ambient noise and the amplitude.

73. The computer program of claim 71, wherein the decaying portion comprises a ring-down signal that results from a transducer transmitting the pulse.

74. The computer program of claim 71, wherein the ambient noise comprises electrical and/or acoustic noise.

75. The computer program of claim 71, further comprising instructions that cause the processor to:

cause transmission of the second signal; and

receive the echo of the second signal.

76. A computer program stored on a computer-readable medium for distinguishing an echo of a transmitted signal from impulse noise, the computer program comprising instructions that cause a processor to:

receive a signal having an amplitude;

measure a duration of the amplitude; and

determine if the duration exceeds a period;

wherein, if the duration exceeds the period, the signal comprises the echo of the transmitted signal and, if the duration does not exceed the period, the signal comprises the impulse noise.

77. The computer program of claim 76, wherein the period comprises a fraction of a period of the transmitted signal.

78. The computer program of claim 77, wherein the period comprises 1/10 of the period of the transmitted signal.

79. The computer program of claim 76, wherein the impulse noise comprises electrical noise and/or acoustic noise.

80. The computer program of claim 76, further comprising instructions that cause the processor to ignore the impulse noise.

81. A computer program stored on a computer-readable medium, the computer program comprising instructions that cause a processor to:

cause a signal to be transmitted towards two objects, a first of the objects being in front of a second of the objects;

receive a first echo from the two objects; and

receive a second echo from the two objects;

wherein, if the second echo is comprised of an amplitude having a greater amplitude than the first echo, the computer program provides for:

using the first echo to determine information relating to the first object; and

using the second echo to determine information

relating to the second object.

82. The computer program of claim 81, wherein the information relating to the first object comprises a distance to the first object.

83. The computer program of claim 81, wherein the information relating to the second object comprises a distance to the second object.

84. The computer program of claim 81, further comprising instructions to store data that corresponds to the first echo and/or the second echo.

85. The computer program of claim 81, wherein the first object is acoustically-weaker than the second object.

86. A computer program stored on a computer-readable medium, the computer program comprising instructions that cause a processor to:

cause a waveform having a predetermined shape to be transmitted;

receive a signal;

analyze a shape of the signal; and

determine if the signal comprises an echo of the waveform based on the analysis of the shape of the signal.

87. The computer program of claim 86, wherein, if the signal has substantially the predetermined shape, the signal is determined to be an echo of the waveform.

88. The computer program of claim 86, wherein, if the signal deviates beyond a certain tolerance from the predetermined shape, the signal is determined not to be an echo of the waveform.